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09/595,363	06/15/2000	Koichi Miyachi	49924(820)	9295

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EXAMINER

NGUYEN, JIMMY H

ART UNIT PAPER NUMBER

2673

DATE MAILED: 12/16/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/595,363

Applicant(s)

MIYACHI, KOICHI

Examiner

Jimmy H. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 15 June 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statement (IDS) submitted on 06/15/2000 and 03/13/2001 and respectively entered as papers No. 2 and 4 are considered by the examiner.

### ***Drawings***

2. Figures 8-10, 15, 17 and 22B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the features, "a plurality of latch circuits" and "scan start signal supplying means for ... supply period" recited in claim 16, lines 7-14, "the supply control means outputs a control signal for setting the latch circuit number "m" to ... external" recited in claim 18, lines 5-8, and "the display control section ... operation" recited in claim 19, lines 3-10, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Specification***

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the

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following is required: regarding to claim 19, the specification does not describe in detail the claimed limitation, “the display control section ... out of operation”, see claim 19, lines 3-10. It is noted that the specification, page 31, line 4 through page 32, line 1, discloses that, in response to the discrimination result from the motion picture/still picture discriminating circuit 21, the display control section 20 switches a switching clock signal, the discriminant signal and the scan start signal, to either motion picture use or still picture use. Regarding to claim 22, the specification does not describe in detail the claimed limitation, “backlight adjusting means for switching brightness of the backlight between the first display mode and the second display mode according to the command signal”. It is noted that the specification, page 47, lines 15-21, discloses that, if the picture is discriminated to be a motion picture based on the discrimination result from the motion picture/still picture discriminating circuit 21, the brightness of the backlight is increased by the backlight adjusting circuit 23, and if the picture is discriminated to be a still picture, the brightness of the backlight is lowered. However, the specification does not disclose backlight adjusting means for switching brightness of the backlight between the first display mode, in which a black display supply operation based on an operation performed by the selector switch is performed, and the second display mode, in which a black display signal supply operation is not performed with the selector switch out of operation, as claimed.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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6. Claims 1, 5, 7, 9, 10, 14, 19, 20 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Verhulst (USPN: 5,627,560, cited in IDS filed on 03/13/01).

As per claims 1, 10, 19, 20 and 23, the claimed invention reads on Verhulst as follows: Verhulst discloses a liquid crystal display (LCD) device and an associate method for displaying an image, the LCD device (see fig. 1) comprising a display panel (a matrix of pixels, see col. 3, line 5), a column line driver (a data register 9, multiplexer circuits 10 and the earth voltage supply 12) including an earth voltage supply (12) (corresponding to the claimed black signal generating means) for generating an earth voltage (i.e., the claimed black display signal) during an interval t0-t1 or a first display mode, a row line driver ( a multiplexer circuit 6), and a display control section (a processing/drive unit 8) for receiving video image information (7), supplying the processed video image signal (7') and control signal (17) to the column line driver and supplying control signal (17) to the row line driver (col. 3, lines 13-30). As noting in figs. 1 and 5, and col. 3, lines 15-23, Verhulst discloses the column driver circuit (9, 10 and 12) providing data signal corresponding to the input image data (7) (further see fig. 5, a data signal of Vdata during an interval t1-t2) and earth voltage (i.e., the claimed black display signal) to column electrodes (further see fig. 5, Vdata during an interval t0-t1). In other words, Verhulst's column driver circuit inherently comprising a signal-use reference power supply signal in order to provide a data signal during an interval t1-t2 or a second display mode and multiplexer circuits (10) (corresponding to the claimed selector switch) for switchedly selecting alternately between the black display signal and the data signal. Verhulst further discloses the control signal (17) inherently including a select signal for making the 1<sup>st</sup> row line (see fig. 5, for the case when n=1) selected while the data signal is provided to column lines during an interval t1-t2, and for making

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the 5<sup>th</sup> row line (i.e.,  $n+4^{\text{th}}$ ) selected while the black signal is provided to column lines during an interval  $t_0-t_1$ , and a discriminating signal for discriminating whether it is the black display signal period (the interval  $t_0-t_1$ ) or the data signal period (the interval  $t_1-t_2$ ). Accordingly, the elements and the steps are read in the reference.

Regarding to claims 5 and 14, as noting in fig. 5, Verhulst further discloses that the supply time of the data signal ( $t_1-t_2$ ) is equal to the supply time of the black signal ( $t_0-t_1$ ). Therefore, these claims are rejected for the reason as set forth above.

Regarding to claim 7, Verhulst further teaches that the distance in time between the presentations of the black signal and the data writing signal depends on the switching time of the liquid crystal material being used and can be chosen to be sufficiently long to bring the pixels to their extreme transmission state (col. 2, lines 32-50 and col. 4, line 67 through col. 5, line 7). Therefore, this claim is rejected for the reason as set forth above.

Regarding to claim 9, Verhulst also discloses the relationships of the voltage of data signal (see fig. 5, the voltage of  $V_{\text{data}}$  during  $t_1-t_2$ ,  $t_3-t_4$ , etc.) and the voltage of the black display signal (see fig. 5, the voltage of  $V_{\text{data}}$  during  $t_0-t_1$ ,  $t_2-t_3$ , etc.) when the counter electrode alternates every field. Therefore, this claim is rejected for the reason as set forth above.

7. Claims 2-4, 8, 11 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Verhulst (WO 97/31362, cited in IDS filed on 03/13/01), hereinafter Verhulst II.

As per claims 2-4, 11 and 15, the claimed invention reads on Verhulst II as follows: Verhulst II discloses a liquid crystal display (LCD) device and an associate method for displaying an image, the LCD device (see fig. 1) comprising a display panel (a matrix of pixels, see page 4, lines 26-28), a column line driver (a data register 9), a row line driver (a row driver

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circuit 6), and a display control section (a processing/control unit 8) for receiving video image information (7), supplying the processed video image signal (7') and control signal (17) to the column line driver and supplying control signal (17) to the row line driver (page 4, line 32 through page 5, line 5). Further, Verhulst II's column line driver inherently comprises a signal-use reference power supply signal in order to provide the data pulse during a data signal supply period (the writing period  $t_w$ ) and the black display signal power supply for generating a black display signal during a black display signal supply period (a reset voltage during the first part  $t_r$ , see figs 4A-4B, page 6, lines 10-12), and a selector switch for switchedly selecting alternately between the black signal and a data signal (a data pulse 44 during the second part  $t_w$  on the selected pixel, see figs. 4A-4B, page 4, lines 33-34, page 6, lines 10-21). Verhulst II further discloses the control signal (17) inherently including a select signal for making the  $n^{\text{th}}$  row line selected while the data signal (data pulse 44) is provided to column lines, and for making the  $n+1^{\text{th}}$  to  $n+8^{\text{th}}$  row lines selected while the black signal is provided to column lines, and a discriminating signal for discriminating whether it is the black display signal period (a reset period  $t_r$ ) or the data signal period ( $t_w$ ) (see figs. 4A-4B, page 7, lines 15-17). Furthermore, Verhulst discloses the number of row lines which is provided with a reset pulse may vary (page 7, lines 11-12). Accordingly, the elements and the steps are read in the reference.

As per claim 8, Verhulst II further teaches that, in order to achieve a complete reset (i.e., to change a white pixel to a black pixel), the value of  $k$  is set to 8 (see page 6, line 22 through page 7, line 1). Accordingly, Verhulst II discloses the claimed invention as specified in claim above.

***Claim Rejections - 35 USC § 103***

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8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Verhulst II as applied to claim 15 above.

Regarding to claims 16-18, as noting in figs. 1 and 4a, Verhulst II discloses the display control section (8) providing to the row driver (6) the control signals (17) inherently comprising a scan start signal in order to control the scanning operation of the row driver, and the row driver inherently comprising scan start signal supplying means for supplying the scan start signal, thereby providing selection pulse (41) for writing black display signal and selection pulse (42) for writing data display signal. Accordingly, Verhulst II discloses the claimed device except for the row driver comprising a shift register, which includes a plurality of latch circuits. However, Official Notice is taken that the LCD row driver comprising a shift register, which includes a plurality of latch circuits, is well known and expected in the art. It would have been obvious to one skilled in the art at the time of the invention to have included the shift register including a plurality of latch circuits in Verhulst's display device because this would provide a thin LCD display since the row driver can be integrated in the same substrate in which the LCD panel and data driver are disposed on.

10. Claims 6 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Verhulst, as applied to claims 1 and 10 above, and further in view of Crossland et al. (USPN: 4,655,550, cited in IDS filed on 03/13/01), hereinafter Crossland.



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Regarding to claims above, as noting in figs. 1 and 5, Verhulst further discloses the control signal (17) from display control section (8) including a switching control signal in order to switching the voltages providing to the column electrodes between the supply time of the data signal ( $t_1-t_2$ ) and the supply time of the black signal ( $t_0-t_1$ ), and the supply time of the data signal ( $t_1-t_2$ ) equal to the supply time of the black signal ( $t_0-t_1$ ). Accordingly, Verhulst discloses the claimed device except for the supply time of the data signal longer than the supply time of the black signal.

However, Crossland discloses a related LCD device, wherein the supply time of the data signal ( $t$ ) is longer than the supply time of the black signal ( $t'$ ) (see figs. 6-7, col. 3, lines 27-66).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to utilize Crossland's teaching in the device of Verhulst because this would prevent the crosstalk problem while still maintaining the operational speed of the display, as taught by Crossland (col. 2, lines 5-11). Therefore, it would have been obvious to combine Crossland with Verhulst to obtain the invention as specified in claims above.

11. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verhulst, as applied to claim 10 above, and further in view of Okada et al. (USPN: 4,778,260, cited in IDS filed on 03/13/01), hereinafter Okada.

Regarding to claim above, Verhulst discloses the claimed device except that Verhulst does not disclose expressly the row lines divided into L blocks on an m-line basis and the row line driver comprising L partial row line drivers.

However, Okada discloses a LCD device, wherein the row lines divided into 3 blocks (L=3) and the scanning line driver circuit (86) (corresponding to the claimed row line driver) comprising 3 partial scanning line driving circuits (see fig. 8).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to utilize Crossland's teaching in the device of Verhulst because this would provide a large display device having a high reliability while providing a high density and a high speed operation, as taught by Okada (col. 9, lines 56-62). Therefore, it would have been obvious to combine Okada with Verhulst to obtain the invention as specified in claims above.

12. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verhulst, as applied to claim 19 above, and further in view of Kuga (EP 0 655 725 A1, cited in IDS filed on 03/13/01).

Regarding to claims above, Verhulst discloses the claimed device except for motion picture/still picture discriminating means, as claimed.

However, Kuga discloses a related LCD device (see fig. 2) comprising motion picture/still picture discriminating means (a comparator 14, see abstract, or determining means, col. 2, lines 11-16) for monitoring data based on an image signal (video signal) derived from the display control section (a circuit including elements 10, 12, 13, 15), thereby determining whether a present input video signal corresponds to a stationary image or a moving image and generating a command signal provided to the controller (15) (i.e., the claimed display control section), which controls the operations of the LCD drivers.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to utilize Kuga's motion picture/still picture discriminating means in the device of

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Verhulst because this would provide a low power consumption display device (col. 6, lines 12-22). Therefore, it would have been obvious to combine Kuga with Verhulst to obtain the invention as specified in claims above.

13. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verhulst, as applied to claim 19 above, and further in view of Motomura et al. (EP 0 730 371 A2, cited in IDS filed on 03/13/01), hereinafter Motomura.

Regarding to claims above, Verhulst discloses the claimed device except for a backlight and backlight adjusting means, as claimed.

However, Motomura discloses a related LCD device (see fig. 2) comprising a backlight (8) and backlight adjusting means (luminance setting means 9) for lower the luminance of the backlight or stop the emission of the backlight during display a black level (i.e., the first display mode) (col. 2, lines 26-33 and col. 3, lines 15-25).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to utilize Motomura's teaching in the device of Verhulst because this would improve the quality of the image picture of the LCD device with a low power consumption (col. 1, lines 46-53 and col. 2, lines 1-6). Therefore, it would have been obvious to combine Motomura with Verhulst to obtain the invention as specified in claim above.

### ***Conclusion***

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Okumura et al. (USPN: 5,844,534) discloses a related LCD device (see fig. 12) comprising a backlight (col. 20, line 18), a standstill/moving picture detection circuit (85) for

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determining whether a present input video signal corresponds to a stationary image or a moving image and generating a command signal provided to the display control section (84) and backlight adjusting means for lowering the amount of backlight during the standstill picture mode (col. 20, lines 13-18). Mikami et al. (USPN: 6,115,017) discloses a related LCD device comprising a row driver including a shift register (816) having a plurality of latch circuits (shift register circuit YR1-Yrm), a Y decoder circuit (818), a plurality of AND gated and scan start signal supplying means for receiving the scan start signal yb1 from the display control section (812) and for providing the scan start signal to the latch circuits (see figs. 31-32, col. 21, line 29 through col. 22, line 6).

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy H. Nguyen whose telephone number is (703) 306-5422. The examiner can normally be reached on Monday - Thursday, 8:00 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached at (703) 305-4938.

**Any response to this action should be mailed to:**

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Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

JHN

December 12, 2002



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